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Toward MW-class High Power Proton Beam at the J-PARC Neutrino Beamline

T2K experiment, by producing highly intense and almost pure beam of muon (anti-)neutrinos at the J-PARC accelerator complex and sending them 295km across Japan, aims to explore neutrino properties. To provide a huge amount of neutrinos to T2K and the approved Hyper-Kamiokande, an upgrade of the J-PARC accelerator and neutrino beamline toward 1.3MW is proposed by increasing the intensity up to 3.2e14 protons-per-pulse (ppp) and reducing the repetition rate down to 1.3s, in light of recent stable 515 kW beam operation with 2.66e14 ppp cycled at 2.48s. This report focuses on recent achievements to realize essential upgrades to the J-PARC neutrino extraction beamline, including our first observation of beam-induced fluorescence in a non-destructive beam profile monitor under development, progress in improving the cooling and radioactive water disposal systems, and remote handling plan for highly radioactive equipment.

Mini-abstract

Essential upgrades to J-PARC neutrino beamline toward 1.3MW are realized with recent achievements.

Experiment/Collaboration

T2K

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